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ECOLOGY

# **Preliminary Ecological Appraisal and Preliminary Roost Assessment**

Poplars Farm, Hardwick

<b>Site</b>	<i>Poplars Farm, Hardwick</i>
<b>Project number</b>	<i>118921</i>
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#### Declaration of compliance

This Preliminary Ecological Appraisal has been undertaken in accordance with British Standard 42020:2013 "Biodiversity, Code of practice for planning and development". The information which we have provided is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's (CIEEM) Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.



MKA Ecology Ltd is a CIEEM Registered Practice. This means that MKA Ecology Ltd are formally recognised for high professional standards, working at the forefront of our profession.

#### Validity of data

Unless stated otherwise the information provided within this report is valid for a maximum period of 24 months from the date of survey. If works at the site have not progressed by this time an updated site visit may be required in order to determine any changes in site composition and ecological constraints.

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## 1. EXECUTIVE SUMMARY

In October 2021 MKA Ecology Limited was commissioned to undertake a Preliminary Ecological Appraisal and Preliminary Roost Assessment of Poplars Farm, Hardwick to assess the potential ecological impacts of a proposed development at the site. A site visit was undertaken on 21 October 2021.

The Preliminary Ecological Appraisal included a habitat survey, protected species scoping survey and desktop study of protected and notable sites and species in the area. The Preliminary Roost Assessment involved a detailed inspection of all buildings and trees to identify any potential bat roost constraints that may be associated with the development.

The Site comprises farm buildings surrounded by bare ground, hardstanding, modified grassland and lines of trees. The proposed development involves the demolition of the modern farm buildings, and the conversion of the existing outhouse to facilitate a residential scheme. The line of non-native trees on the western boundary will be replaced with a native species-rich hedgerow with trees.

The following ecological constraints were identified at the Site with recommendations made as follows;

- **Habitats:** The line of trees on the northern boundary are of ecological value and should be retained and protected from accidental damage during construction.
- **Great crested newt:** There is a low risk of great crested newt being present within the line of trees on the western boundary or modified grassland scheduled for removal. As a precautionary measure, it is recommended construction works are undertaken following a Method Statement detailing measures to prevent great crested newt being injured within the development footprint, in the unlikely event of their presence.
- **Birds:** The buildings and trees provide suitable nesting habitat for breeding birds. It is recommended that clearance work avoids the bird breeding season which runs from March to August. Vegetation clearance works and building demolition undertaken between the months of March and August will require an experienced ornithologist to conduct a nesting bird check beforehand.
- **Bats:** No evidence of roosting bats was found during the inspection and this species group does not pose any significant constraints. To ensure the area remains suitable for foraging and commuting bats, it is recommended a sensitive lighting scheme is developed for any external lighting.

Due to the low existing ecological value of the site, the proposed development provides an opportunity to deliver enhancements for biodiversity. Replacing the non-native trees with a species-rich hedgerow on the western boundary will create a Habitat of Principal Importance. The surrounding area is a

stronghold for black poplar, a rare British tree species. Therefore, options to include cuttings from local stock in the hedgerow should be explored. Furthermore, the installation of log piles for invertebrates, nest boxes for birds and roosting boxes for bats are recommended. These recommendations are in line with National Planning Policy Framework and the Vale of Aylesbury Local Plan and will ultimately help deliver a sustainable development.

## 2. INTRODUCTION

### 2.1. Aims and scope of Preliminary Ecological Appraisal

In October 2021 MKA Ecology Limited was commissioned to undertake a Preliminary Ecological Appraisal at Poplars Farm, Hardwick by ACH Planning in order to support a planning application for a residential development.

The aims of Preliminary Ecological Appraisal and Preliminary Roost Assessment were to:

- Undertake a desktop study to identify the extent of protected and notable species and habitats within close proximity of the Site;
- Prepare a habitat map for the Site;
- Identify evidence of protected species/species of conservation concern at the Site;
- Assess the potential impacts of the proposed development, using existing plans;
- Detail recommendations for further survey effort where required;
- Detail recommendations for biodiversity enhancements;
- Undertake a Preliminary Roost Assessment to establish the suitability of the buildings and trees at the site for roosting bats, and record any evidence of bat presence; and
- Assess the need for further survey effort, a European Protected Species Licence or mitigation for bats, if required.

### 2.2. Site description and context

The survey area is shown on the map in Figure 1. Within this report this area is referred to as the Site or Poplars Farm. It is located on the northern fringe of Hardwick, a small rural village approximately four kilometres north of Aylesbury (Site centred on OS grid reference SP 80444 19300) and falls under the authority of Buckinghamshire Council. The Site is approximately 0.3 Ha in size and comprises a series of farm buildings surrounded hardstanding and cleared land. A field of grassland lies to the east and partly falls within the site boundary. Lines of trees are present on the northern and western boundaries.

### 2.3. Proposed development

The proposed development seeks permission for the change of building from agricultural to residential (C3) use. Four detached dwellings are proposed, which will require the demolition of the modern agricultural buildings and the conversion of the existing outhouse. The existing line of trees on the western boundary will be replaced with a species-rich native hedgerow with trees.

## 2.4. Legislation and planning policy

This Preliminary Ecological Appraisal and Preliminary Roost Assessment has been undertaken with reference to relevant wildlife legislation and planning policy.

Relevant legislation considered within the scope of this document includes the following:

- The Wildlife and Countryside Act 1981 (as amended);
- The Conservation of Habitats and Species Regulations 2017 (as amended);
- Natural Environment and Rural Communities (NERC) Act 2006;
- The Countryside and Rights of Way (CRoW) Act 2000;
- Protection of Badgers Act 1992; and
- Wild Mammals (Protection) Act 1996.

Further information is provided in Appendix 1, including levels of protection granted to the species considered in Section 3.3.

In addition to obligations under wildlife legislation, the revised National Planning Policy Framework (NPPF) updated on 20<sup>th</sup> July 2021 requires planning decisions to contribute to conserving and enhancing the local environment. Further details are provided in Appendix 1.

Local Planning Policy is detailed in the adopted Vale of Aylesbury Local Plan (2021) and covers a number of policies relating to biodiversity and habitat conservation, including:

- Policy NE1: Biodiversity and geodiversity
- Policy NE2: River and stream corridors
- Policy NE3: The Chilterns AONB and setting
- Policy NE5: Pollution, air quality and contaminated land
- Policy NE6: Local green space
- Policy NE8: Trees, hedgerows and woodlands

Where relevant these are discussed in further detail in Section 5.

### 3. METHODOLOGIES

This Preliminary Ecological Appraisal has been undertaken in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Preliminary Ecological Appraisal, 2<sup>nd</sup> edition (CIEEM, 2017).

#### 3.1. Desktop study

A data search was conducted for the Site and the surrounding area within 2km. Data was retrieved from the sources listed in Table 1.

**Table 1: Sources of data for desktop study**

Organisation	Data collected	Date collected
Multi-agency Geographic Information for the Countryside (MAGIC) <a href="http://www.magic.gov.uk">www.magic.gov.uk</a>	Information on local, national and international statutory protected areas.	19/10/2021
Buckinghamshire and Milton Keynes Environmental Records Centre	Information on protected and notable sites and species within 2km of the Site (SP 80444 19300).	21/10/2021
Ordnance Survey maps and aerial photography	Information on habitats and connectivity between the Site and the surrounding landscape	19/10/2021
Plantlife Important Plant Areas	Information on important plant areas within 2km of the Site (SP 80444 19300).	21/10/2021
Buglife Important Invertebrate Areas	Information on important invertebrate areas within 2km of the Site (SP 80444 19300).	21/10/2021

Buckinghamshire Council Aylesbury Vale Area planning portal was also referred to in order to understand the scope of further development surrounding the Site.

#### 3.2. UK Habitat Classification

Habitats were surveyed using the standardised UK Habitat classification and mapping methodology (UK Habs) (Butcher et al, 2020). Data were recorded onto field maps and then transferred onto a Geographic Information System (GIS) following the UK Habs Colour Mapping Pallet for QGIS. Dominant plant species were observed and recorded within each habitat type. The plant species nomenclature follows that of Stace (2019).



The DAFOR scale is used to describe the relative abundance of species. The scale is shown in Table 2. It is important to note that where a species is described as rare this description refers to its relative abundance within the Site and is not a description of its abundance within the wider landscape. Therefore, a species with a rare relative abundance within the Site may be common within the wider landscape.

**Table 2: DAFOR scale**

DAFOR code	Relative abundance
D	Dominant
A	Abundant
F	Frequent
O	Occasional
R	Rare

### 3.3. Protected and notable species scoping survey

As part of the Preliminary Ecological Appraisal, an assessment of the potential for the habitats on site to support protected or notable species was made. This assessment was based on the quality, extent and interconnectivity of suitable habitats, along with the results of the desktop study detailed in Section 3.1. This includes Species of Principal Importance as listed on Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006), and Red and Amber listed Birds of Conservation Concern (BoCC) as per Eaton *et al.*, 2015 (see Appendix 1).

Protected and notable species considered within the protected species scoping survey for Poplars Farm include, but are not limited to, the following:

- Plants and fungi: Black-poplar *Populus nigra subsp. Betulifolia*, bluebell *Hyacinthoides non-scripta*, Himalayan balsam *Impatiens glandulifera*,
- Invertebrates: Stag beetle *Lucanus cervus*, purple emperor *Apatura iris*, black hairstreak *Satyrium pruni*.
- Fish: European eel *Anguilla anguilla*, river lamprey *Lampetra fluviatilis*, brown trout *Salmo trutta subsp. fario.*, bullhead *Cottus gobio*.
- Amphibians: Great crested newt *Triturus cristatus* and common toad *Bufo bufo*.
- Reptiles: Adder *Vipera berus*, common lizard *Zootoca vivipara*, slow-worm *Anguis fragilis*, grass snake *Natrix natrix helvetica*.
- Birds: All species, with special reference to species listed under Schedule 1 of The Wildlife and Countryside Act 1981 (as amended) and Species of Principal Importance.

- Mammals: Badger *Meles meles*, bats (all species), water vole *Arvicola amphibius*, otter *Lutra lutra*, hazel dormouse *Muscardinus avellanarius*, hedgehog *Erinaceus europaeus*, brown hare *Lepus europaeus*, harvest mouse *Micromys minutus* and polecat *Mustela putorius*.

In each case the likelihood of presence of these protected species at the Site was classified as being either confirmed, high, moderate, low or negligible.

**Confirmed:** The species is confirmed on the site during the Preliminary Ecological Appraisal, previous survey effort or recent records.

**High:** Habitats are available onsite which are highly suitable for this species and there are records within the desktop study. The surrounding areas also provide widespread opportunities for the species which are well connected to the Site.

**Moderate:** Some suitable habitat available on site for the species although not of optimum quality. Species is present with the desktop study.

**Low:** Some suitable habitat available on site for the species but this is low value and possibly of small scale or with poor connectivity. No, or very few, records returned in the desktop study.

**Negligible:** No suitable habitat available for the species, or very little poor-quality habitat.

This protected species scoping survey is designed to assess the *potential* for presence or absence of a particular species or species group, and does not constitute a full survey for these species.

### 3.4. Surveyor, author and reviewer

The survey was undertaken, and report written, by Felix Bird, Consultant Ecologist at MKA Ecology Ltd and Rob Bishop GradCIEEM, Consultant Ecologist at MKA Ecology Ltd. Felix has three years' experience undertaking Preliminary Ecological Appraisals and assisting with Preliminary Roost Assessments. Rob has three years' experience undertaking Preliminary Ecological Appraisals and Preliminary Roost Assessments and holds a Natural England Class II bat licence.

The report has been reviewed by Will O'Connor CEcol MCIEEM, Director and Principal Ecologist at MKA Ecology Ltd. Will has over ten years' experience as a consultant ecologist.

### 3.5. Date, time and weather conditions

See Table 3 below for details of the date, time and prevailing weather conditions recorded during the site visit for the Preliminary Ecological Appraisal.

**Table 3: Date, time and weather conditions of survey visit**

Date	Time of survey	Weather conditions*
21/10/2021	11:00	Wind: 2W Cloud: 0/8 Temp: 9°C Rain: None

\*Wind as per Beaufort Scale / Cloud cover given in Oktas.

### 3.6. Constraints

A single visit cannot always ascertain the presence or absence of a protected species. However, an assessment is made of the likelihood for protected species to occur based on habitat characteristics and the ecology of each species. Where there is potential for protected species, additional survey work may be required to ascertain their presence or absence.

Data on species records obtained from local biological records centres are sometimes only available at low spatial resolutions and are constrained by the voluntary nature of the contributions and what has been chosen to be submitted as records. While these records provide a useful indication of species recorded in the local area, in particular protected or notable species, the data is not necessarily an accurate reflection of species assemblages or abundance in the vicinity.

The assessment was undertaken outside the optimum period of April to the end of September. However, within the scope of the study it was possible to identify key habitats present and assess their likelihood of supporting a greater range of species.

## 4. RESULTS

### 4.1. Desktop study

An ecological desktop study was completed for the Site and the surrounding 2km. Data provided by Buckinghamshire and Milton Keynes Environmental Records Centre identified a moderate number of UK and European protected species, Species and Habitats of Principal Importance (as listed under Section 41 of the NERC Act 2006), and species of conservation concern within 2km of the Site. It should be noted that this is not a comprehensive list of the distribution or extent of the local flora and fauna of conservation importance. These species records are discussed in greater detail in the protected species scoping survey section (Section 4.3 below).

No statutorily designated sites were identified within 2km of Poplars Farm, Hardwick.

Details of non-statutorily designated sites identified as part of the desktop study are displayed in Table 4 below. These consist of two Biological Notification Sites (BNSs).

**Table 4: Non-statutorily designated sites within 2km of Poplars Farm, Hardwick**

Site name	Area (ha)	Distance and direction	Reasons for selection
Quarrendon Fields BNS	Not provided	1.8km SW	An area of farmland comprising neutral grassland. BTO surveys between 1974 and 1977 indicated importance for wintering and passage birds.
Castle Field and Adjacent Fields BNS	Not provided	1.4km N	Supports neutral grassland bounded or crossed by streams with small flood plains.

To the immediate west and south of the Site lie two roads, the A413 and Lower Road respectively. To the north lies a residential property and to the east lies a grassland field associated with a neighbouring property.

The Site is not situated within any SSSI Impact Risk Zones (Natural England, 2019) and there are no Special Protection Areas (SPA), Special Areas of Conservation (SAC) or Ramsar Sites situated within 10km of the Site. The Site does not lie within or in the vicinity of any Plantlife Important Plant Areas (IPA) or Buglife Important Invertebrate Areas (IIA).

The wider landscape predominately comprises large arable fields bounded by small streams and hedgerows. Small parcels of traditional orchard, a Habitat of Principal Importance, are listed within Whitechurch and Weedon, small villages to the north and south of Hardwick.

## 4.2. UK Habitat Classification

The Site was found to comprise artificial habitats including buildings, hardstanding and bare ground, as well as small areas of modified grassland and lines of trees. More detailed species lists, along with their relative abundance, can be found in Appendix 2. The UK habitat classification survey map is provided in Figure 1 at the end of this section. Descriptions of the habitat types present along with dominant species compositions are provided below.

### *Bare, unvegetated artificial surface (u1c)*

A large proportion of the Site, particularly within the western side, comprised a cleared vacant plot (Photograph 1, Appendix 3). Due to the lack of vegetation (with the exception of the southern corner), it appeared to have been cleared relatively recently.

### *Modified grassland (g4)*

A small parcel of modified grassland was present in the south-west corner of the Site, where vegetation had started to colonise the cleared land (Photograph 2, Appendix 3). Annual meadow-grass *Poa annua* was frequently occurring, as well as undesirable species such as common nettle *Urtica dioica*. The parcel of grassland was considered to be in poor condition and did not appear to be managed.

Modified grassland was also present in a large field to the east, a small section of which is included within the site boundary (Photograph 3, Appendix 3). The grassland had a short, regular sward and appeared to be regularly managed. It was species-poor, but due to the lack of physical damage, undesirable species, scrub or bracken it was considered to be in moderate condition.

### *Buildings (u1b5)*

There were three buildings present onsite. These buildings were of different ages and varying structural composition (see Photograph 4 to Photograph 9, Appendix 3). Individual building descriptions are provided in the results of the Preliminary Roost Assessment (Table 6).

### *Other developed land (u1b6)*

Hardstanding was present in the east of the Site, providing access to the farm buildings from Lower Road and car parking space (Photograph 10, Appendix 3).

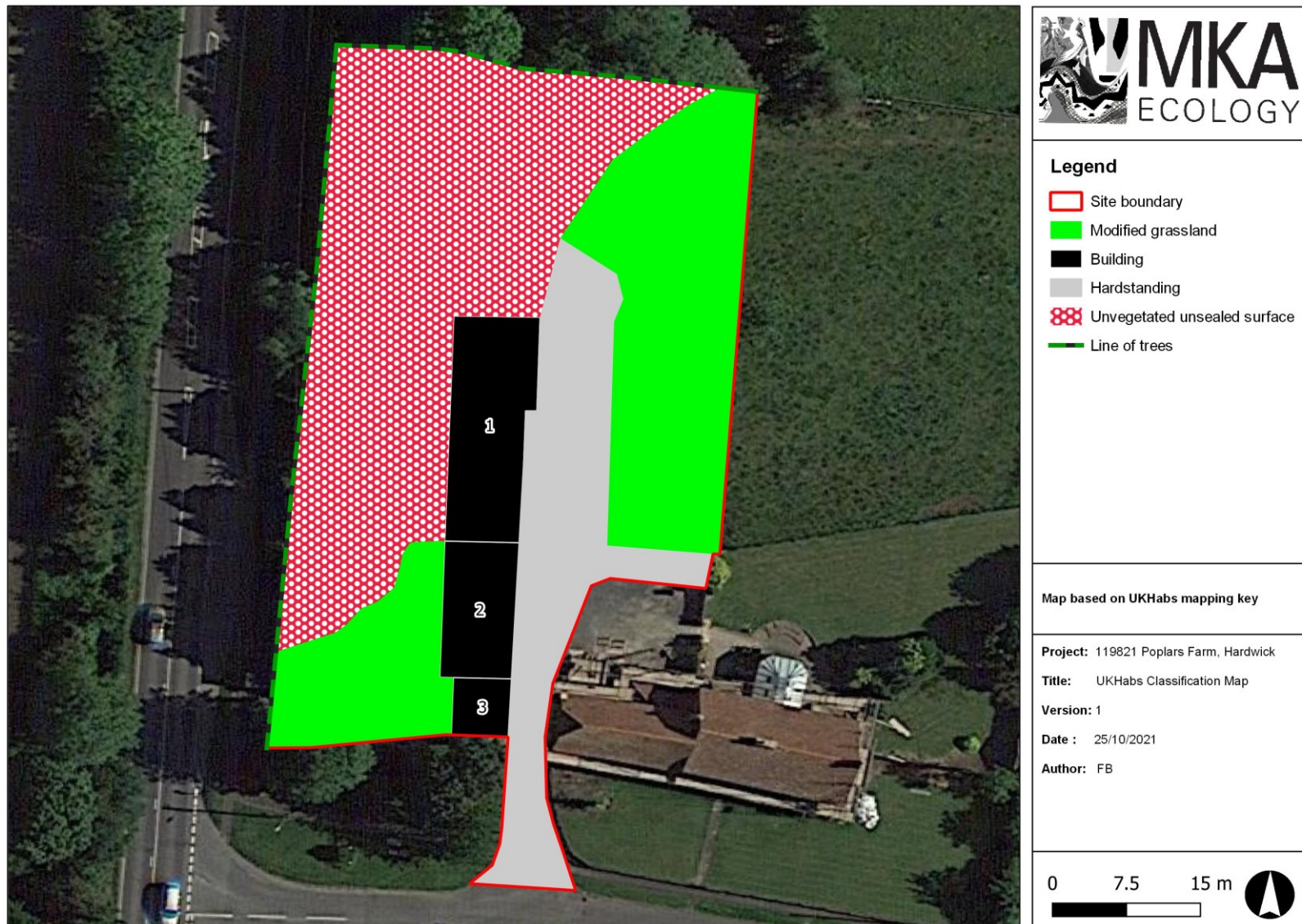
### *Line of trees (w1g6)*

A line of semi-mature Leyland cypress *Cupressocyparis leylandii* trees were present on the western boundary (Photograph 11, Appendix 3). The ground flora was limited and largely comprised bramble

*Rubus fruticosus agg.* and ivy *Hedera helix* which were both occasionally occurring. Due to the dominance of non-native species, the lack of mature trees and the lack of buffer vegetation, this line of trees was considered to be in poor condition.

A line of ash *Fraxinus excelsior* was present on the northern boundary and partially within the property to the north of the Site (Photograph 12, Appendix 3). Whilst larger gaps in the canopy were present, due to the presence of mature, native, healthy trees, this line of trees was deemed to be in moderate condition.

Figure 1: UK Habitat Classification map of Poplars Farm, Hardwick



### 4.3. Protected species scoping survey

#### *Plants and fungi*

The data search returned a large number of protected or notable plant species within the search area. These included species listed under Schedule 8 of the Wildlife and Countryside Act 1981 and those red-listed as vulnerable for Great Britain or Locally Important. Of the 125 notable plant records, 100 records were associated with black poplar. The data search also returned records of species which are listed as invasive species under Schedule 9 of the Wildlife & Countryside Act (1981).

No protected or notable species were recorded onsite, only plant species that are common in the wider landscape. The Site largely comprised artificial habitats and modified grassland meaning habitat for a diverse range of flora is limited. The grassland field to the east was regularly maintained at a short sward length, further limiting available habitat for protected or notable plant species. The likelihood of the site supporting protected or notable plant species is **negligible** and this species group is not considered further within this report.

#### *Invertebrates*

The data search returned ten records of protected or notable invertebrates within the search area. This included species listed under Section 41 of the NERC Act (2006) and Schedule 5 of the Wildlife and Countryside Act 1981.

The lack of vegetation or structural diversity limits the current value of the Site and the likelihood of protected invertebrates, or significant assemblages being present is considered to be **negligible**. This species group is not considered further within this report.

#### *Fish*

One record of bullhead within the stream running into Hardwick brook was returned by the data search. No aquatic habitats are present onsite and therefore the risk of protected fish species utilising the Site is deemed to be **negligible**. This species group is not considered further within this report.

#### *Amphibians*

The data search returned five records of common frog *Rana temporaria*, one record of common toad, one record of palmate newt *Lissotriton helveticus*, four records of smooth newt *Lissotriton vulgaris* and six records of great crested newt. The records of great crested newt are widespread across the search area and included a daytime observation of an individual great crested newt on Lower Road, Hardwick.

A search of Defra's MAGIC website did not return any European Protected Species Licences granted for great crested newt within 2km of the site boundary



An Ordnance Survey map and aerial photographs were consulted for the presence of suitable waterbodies within 500m of the Site boundary. A single rectangular artificial pond was identified 430m south-east from the Site, as well as three drains. The closest drain is located 20m west of the Site, however it is separated by the A413 which is likely to form a barrier to great crested newt movement.

The hardstanding, buildings and bare ground are not considered to provide suitable terrestrial habitat for great crested newt. There are no features suitable for hibernation or resting present in the modified grassland, although the line of trees may provide some limited opportunities. Overall the likelihood of great crested newt being present onsite is considered to be **low**.

### Reptiles

The data search returned two records of grass snake and one historical record of adder from 1975. The hardstanding, buildings and bare ground are not suitable to support reptiles. The line of trees may provide suitable habitat for resting and to facilitate movement, however as the line of trees is adjacent to the A413 and bounded by Lower Road, the connectivity of this feature to suitable habitat in the wider landscape is limited.

Overall the likelihood of reptiles being present is deemed to be **negligible**. This species group is not considered further within this report.

### Birds

Six species were recorded during the site visit. These species are shown in Table 5 together with their conservation status. It is important to note that this is not a full inventory of species for the site.

**Table 5: Bird species recorded during site visit at Poplars Farm, Hardwick**

Common name	Systematic name	S1 W&CA <sup>1</sup>	BoCC <sup>2</sup> Status	S41 SPI <sup>3</sup>	Local PrSp <sup>4</sup>
Woodpigeon*	<i>Columba palumbus</i>	-	Green	-	-
Red kite*	<i>Milvus milvus</i>	Yes	Green	-	-
Magpie*	<i>Pica pica</i>	-	Green	-	-
Wren	<i>Troglodytes troglodytes</i>	-	Green	-	-
Robin	<i>Erithacus rubecula</i>	-	Green	-	-
Goldfinch*	<i>Carduelis carduelis</i>	-	Green	-	-

<sup>1</sup> Schedule 1 of The Wildlife and Countryside Act 1981 (see Appendix 1)

<sup>2</sup> Birds of Conservation Concern (see Appendix 1)

<sup>3</sup> Section 41 (NERC Act 2006) 'Species of Principal Importance' (see Appendix 1)

<sup>4</sup> Local Priority Species

\* Flying over the Site

The data search returned records of species listed on Annex 1 of the Birds Directive, Schedule 1 of the Wildlife and Countryside Act 1981, Section 41 of the NERC Act (2006) and birds listed as Amber or Red on BoCC. Species listed on Schedule 1 which were observed during the site visit and returned in the data search included raptors (hobby *Falco subbuteo*, red kite *Milvus milvus*, merlin *Falco columbarius*), waders (green sandpiper *Tringa ochropus*) and species which breed in northern Britain but are common wintering visitors (redwing *Turdus iliacus*, fieldfare *Turdus pilaris*, brambling *Fringilla montifringilla*). These species are unlikely to use the Site for breeding due to a lack of suitable habitat. The Site may occasionally be used by overwintering fieldfare and redwing, although it is unlikely that the Site will support significant numbers of these species.

Some notable passerine birds listed on the data search including dunnock *Prunella modularis* and song thrush *Turdus philomelos* (which are listed as Amber and Red on the BoCC List), and those recorded during the site visit such as robin and wren, have the potential to utilise the Site for breeding, albeit in small numbers.

The buildings and line of trees offer potential for nesting birds and an old nest was noted within Building 3. As such the likelihood of breeding birds utilising the Site for nesting is **confirmed** but the likelihood of the Site supporting important assemblages of birds, or protected bird species, is **negligible**.

#### *Badgers*

The data search returned 18 records for badger. The habitats present do not provide suitable sett building habitat although the adjacent field to the east provides suitable foraging habitat. No field signs were found during the site visit and as such the risk of badgers utilising the Site, or setts being present, is considered to be **negligible**. This species is not considered further within this report.

#### *Hedgehog*

The data search returned eight records of hedgehog. The line of trees and modified grassland is considered likely to provide some foraging and nesting habitat, however the majority of the Site is not considered to be suitable for this species and the risk of their presence is considered to be **low**.

#### *Other mammals*

The data search returned three records of hare *Lepus europaeus* and one record of Chinese water deer *Hydropotes inermis*. The habitats present on Site are not considered suitable to support either species and the likelihood of their presence, or any other protected mammal species, is considered to be **negligible**.

#### 4.4. Preliminary Roost Assessment

##### *Desktop study*

The data search returned 42 of records for bats within the search area. Six species were recorded, which included brown long-eared bat *Plecotus auritus*, common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, noctule *Nyctalus noctula*, serotine *Eptesicus serotinus*, Natterer's bat *Myotis nattereri*, as well as a number of unidentified bats of the *Myotis* and *Pipistrellus* genus. This is considered to be a typical diversity of bat species for this region. These species roost in both buildings and trees. Eight roost locations were returned by the data search, the closest of which is approximately 1km south-east of the Site.

MAGIC map was consulted for existing European Protected Species Licences (EPSL) granted for bats within 2km of the site boundary. Two licences were returned and granted the destruction of common pipistrelle and brown long-eared bat resting places. The closest EPSL was located 1.6km north of the Site and allowed the destruction of a common pipistrelle and brown long-eared bat resting place (licence period March 2010 - October 2010).

The line of trees offer some foraging and commuting value for bats, however this habitat is widespread and common in the wider area, and only a relatively small length is present onsite. The proximity to the A413 may also limit the value for bats due to the disturbance caused by regular traffic. The gardens, mature trees, hedgerows and streams in the surrounding area are likely to support foraging bats, although the large arable fields are of limited value. The hedgerows and streams in the landscape are likely to form important commuting routes for bats between roosting and foraging locations. Overall, there is a **low** risk of the Site supporting significant numbers of commuting and foraging bats.

The buildings and trees within the village of Hardwick will provide numerous roosting opportunities for bats. The records of roosts returned by the data search **confirms** the risk of the surrounding area supporting roosting bats.

##### *Preliminary Roost Assessment results*

The Site contained three buildings, all of which are considered to be impacted by the development. Potential roosting locations included gaps around metal frames, gaps in the brickwork, holes in timber beams and gaps under asbestos roof sheets. All of these locations were inspected, and no evidence of roosting bats was found. The line of trees scheduled to be removed comprise Leyland cypress and did not support any features suitable for roosting bats. All other trees were considered to be outside of the zone of influence.

Table 6 below outlines the results of the Preliminary Roost Assessment in more detail.

**Table 6: Building roost assessment results**

Building	Roost suitability	Description	Bat roost evidence and potential
Building 1	Negligible	A modern farm building constructed with a metal frame, brick built walls and a dual pitch asbestos sheet roof (Photograph 4 and Photograph 5, Appendix 3). An internal wall divided the building into two large rooms. Approximately half of the eastern aspect was open-sided. No loft space was present.	Gaps underneath the asbestos roof sheets and the open side provide access into the building. Limited roosting opportunities were available and included gaps in the brickwork and gaps between the metal frame and brickwork. These features were inspected with torches and no evidence of roosting bats was recorded.
Building 2	Negligible	A modern farm building, connected directly to the south of Building 1, constructed with a metal frame, brick built walls and a dual pitch asbestos sheet roof (Photograph 6 and Photograph 7, Appendix 3). No loft space was present.	Gaps underneath the asbestos roof sheets and hanging asbestos sheets provide access into the building. Small gaps in the brickwork provided potential roosting locations however no evidence of bats was found during inspection.
Building 3	Negligible	A small outhouse, considered likely to been constructed in the mid 1800's. Currently in a state of disrepair with unstable brick walls and without a roof (Photograph 8, Appendix 3)	Gaps within the brickwork of the walls and holes within the timber beams provide suitable roosting locations (Photograph 9, Appendix 3). All features were inspected, and no evidence of roosting bats was recorded.

## 5. ECOLOGICAL CONSTRAINTS, OPPORTUNITIES AND RECOMMENDATIONS

This section outlines key ecological issues for consideration, recommendations for further work and ecological enhancements where appropriate.

### *Off-site habitats*

There are a small number of non-statutory designated sites within 2km of Poplars Farm, Hardwick. The closest designated site, Castle Field and Adjacent Fields BNS, is situated 1.4km north of the Site. These designated sites are unlikely to be directly or indirectly impacted due to distance and the small size of the development.

### *On-site habitats*

A large proportion of the Site comprised artificial habitats of low ecological value. These habitats included buildings, bare ground and hardstanding.

The majority of the ecological value was in the northern line of trees. This habitat is predicted to be retained within the site design and it is recommended it is protected during construction to avoid accidental damage. A minimum five-meter natural buffer should be retained around the line of trees for the benefit of wildlife. This recommendation is in line with Policy NE8 of the Local Plan (2021).

#### **Recommendation 1**

Retain and protect the northern line of trees using Heras fencing.

### *Amphibians*

The likelihood of great crested newt being present on Site is considered to be low due to the limited area of suitable habitat present onsite and the adjacent roads forming a barrier to great crested newt movement. However, records of great crested newt have been returned from Lower Road, Hardwick and a ditch is within close proximity to the Site.

As such, it is possible that newts may become trapped in any excavations and newts may use stored materials for cover which may result in newts being disturbed, injured or killed, although the risk is considered to be very low due to the small size of the suitable habitat present.

Great crested newts are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended); (see Appendix 1).

Any potential impacts can be minimised and removed by undertaking works following safe ecological practices, careful planning and timing of works. A Method Statement must be agreed with the Local Planning Authority before works begin onsite.

#### **Recommendation 2**

Works should follow the Method Statement which must be agreed with the LPA, and detail best practice methods to avoid impacts upon great crested newt.

If a great crested newt is found during works on the site, works must immediately cease and MKA Ecology Ltd (01763 262211) or Natural England (0300 060 3900) must be contacted.

#### **Recommendation 3**

If a great crested newt is found during works on the site, works must immediately cease and MKA Ecology Ltd (01763 262211) or Natural England (0300 060 3900) must be contacted.

#### **Birds**

The existing farm buildings and lines of trees have potential to support nesting birds.

All wild birds, their active nests and eggs are protected under The Wildlife and Countryside Act 1981 (as amended), which makes it an offence deliberately, or recklessly, to kill or injure any wild bird or damage or destroy any active birds' nest or eggs.

Scheduling vegetation and building removal works between the months of September and February inclusive (i.e. outside of the bird season) would avoid impacts on breeding birds.

Where vegetation and building clearance works are required during the breeding bird season (between the months of March and August inclusive), such works can only proceed following the completion of a nesting bird check undertaken by an experienced ornithologist. Any active birds' nest identified during this check must be protected from harm until the nesting attempt is complete. This will require a buffer to be left around the nest, the size of which will depend upon the species involved (as a general rule, this will be 10m in all directions around the nest). Any buffers established as a result of the initial nesting bird check must be subjected to a second check after the original nesting attempt is completed, before such areas can be removed during the breeding bird season.

#### **Recommendation 4**

Schedule vegetation and building clearance works between the months of September and February inclusive to avoid impacts on breeding birds. Where this timing is not feasible works should be preceded by a nesting bird check.

**It is strongly recommended that any potential nesting bird habitat is cleared outside the breeding bird season in order to avoid potentially lengthy delays if nests are found during nesting bird checks.**

#### *Bats*

Bat roosting behaviour, commuting and foraging activity can additionally be dramatically affected by artificial lighting (BCT, 2018). It is strongly recommended that any proposed exterior lighting on the new buildings or access road is designed and managed appropriately to ensure that the area remains suitable for foraging bats. A sensitive lighting scheme should be developed to allow suitable roosting and foraging areas for bats. The line of trees on the boundary in particular should remain unlit.

#### **Recommendation 5**

Light pollution from any lighting should be minimised both during and after the construction phase. A sensitive lighting scheme should be developed to allow for suitable roosting and foraging areas for bats within the site with maximum use of appropriate luminaries and directed lighting.

#### *Hedgehogs*

The line of trees and grassland habitat on site provide suitable habitat for hedgehog, a Species of Principal Importance.

The installation of boundary fences between gardens can impact on hedgehogs through loss of habitat connectivity. At least one 13cm x 13cm hole should be installed at the bottom of each boundary fence (with a focus on fences separating residential gardens, and excluding fences adjacent to roads), in order to maintain connectivity for hedgehogs between properties. These 'hedgehog highways' (PTES, 2018) should have appropriate signage installed to indicate their purpose and stipulate that they should remain open.

#### **Recommendation 6**

Maintain habitat connectivity for hedgehog through the installation of at least one 13cm x 13cm hole at the bottom of each boundary fence (with a focus on fences separating residential gardens, and excluding fences adjacent to roads). These should be accompanied with appropriate signage indicating their purpose and stipulating that they should remain open.

#### *Opportunities for biodiversity enhancement*

Following the issue of the National Planning Policy Framework (NPPF; see Appendix 1), all planning decisions should aim to maintain and enhance, restore or add to biodiversity and geological conservation interests. Ecological enhancements should aim to deliver biodiversity gains for the proposed development site.

Planting of native species or those with a known attraction or benefit to local wildlife is recommended in landscape proposals. This will help to increase native plant species diversity, provide more ecologically valuable habitats, and result in a greater diversity of other dependent taxonomic groups.

#### Recommendation 7

It is recommended that native British species are incorporated within the planting scheme for the final landscaping design in order to enhance the overall value of the site for biodiversity, in line with the requirements of the NPPF.

Black poplar is a rare species of tree, with an estimated population of 7000 individuals in the UK. The Aylesbury Vale is an important stronghold for this species and supports approximately one third of the national population (Cottrell, 2004). A species-rich native hedgerow is proposed to replace the existing non-native line of trees on the western boundary. It is recommended black poplar cuttings from local stock are included within the hedgerow.

#### Recommendation 8

Replace the non-native line of trees with a species-rich native hedgerow. Opportunities to include native black poplar to the hedgerow should be explored.

A number of simple measures to improve biodiversity at the Site can be implemented. The proposed amenity grassland habitat provides an opportunity to create a bee lawn that can act as an important resource for bumblebees and other insect pollinators, which in turn provides benefits for other species within the ecosystem, including reptiles and bats. A bee lawn can be created by over-seeding the lawn with suitable plants such as selfheal *Prunella vulgaris* or bird's-foot-trefoil *Lotus corniculatus* and by reducing the mowing height and frequency.

Additionally, the creation of deadwood features at the site will be particularly valuable for invertebrates as a foraging resource, which in turn benefits a range of other species such as hedgehogs and reptiles. This could include rotting roots or tree stumps spread around various locations. The drilling of holes or cutting of notches can add even more value for invertebrates.

#### Recommendation 9

Incorporate simple biodiversity enhancement measures at the site, including the creation of a bee lawn and provision of deadwood features.

Enhanced opportunities for breeding birds should be incorporated into the design scheme. Where possible, bird boxes should be integrated into the new dwellings during construction. It is recommended that there is focus on swift *Apus apus*, an Amber listed species associated with the urban environment. Examples of suitable boxes are shown in Appendix 4 together with information concerning the correct siting of these enhancement features. Swift boxes also provide suitable nesting habitat for other notable



species of conservation concern, such as house sparrow *Passer domesticus*, as well as common and generalist species.

**Recommendation 10**

A minimum of four bird boxes should be installed at the site, to include provisions for swift.

The wider landscape has the potential for use by foraging bats. With this in mind, enhanced opportunities for roosting bats should also be provided at the site through installation of bat boxes. Integrated bat boxes should be installed on the Site post-development, comprising one per new dwelling. More information on recommended bat boxes is provided in Appendix 4.

**Recommendation 11**

Provisions should be made for roosting bats at the site post-development, to include a minimum of four integrated or wall mounted bat bricks or bat boxes and boxes mounted in trees at the site.

*Summary of recommendations*

Table 7 below summarises the recommendations made within this report, and specifies the stage of the development at which action is required. Colour coding of cells within the table is as follows:

**Key:**

	No action required for this species group at this stage
	Action required (see notes for details)
	Level of action required will be determined following the further survey work

**Table 7: Summary of recommendations at Poplars Farm, Hardwick**

Species	Pre-planning action required?	Pre-construction action required?	Construction phase mitigation required?	Enhancements proposed?
Habitats	Native planting	No	Protect the line of trees on the northern boundary with Heras fencing	Native planting
Invertebrates	No	No	No	Deadwood features and bee lawns
Great crested newt	No	No	Method statement for removal of line of trees	No
Birds	Bird boxes	No	Timing of works for vegetation removal OR further survey work	Bird boxes and native planting

Species	Pre-planning action required?	Pre-construction action required?	Construction phase mitigation required?	Enhancements proposed?
Bats	Bat boxes	No	Incorporate integrated bird boxes into new buildings  Sensitive lighting	Bat boxes, native planting and sensitive lighting scheme
Hedgehog	No	No	No	Hedgehog highways, native planting

## 6. CONCLUSIONS

A Preliminary Ecological Appraisal and Preliminary Roost Assessment was conducted at Poplars Farm, Hardwick in October 2021 by MKA Ecology Ltd on behalf of ACH Planning Ltd.

The Site was found to comprise two farm buildings and an outhouse, hardstanding, bare ground and modified grassland. A non-native line of trees was present on the western boundary and a native line of trees was present on the northern boundary. The proposed development plans involve the demolition of the existing farm buildings and the conversion of the outhouse into four new dwellings with associated soft landscaping and infrastructure. The non-native line of trees will be removed and replaced with a species-rich native hedgerow.

There is a low risk of great crested newt being present on site during the terrestrial stage of their life cycle and a method statement has been recommended as a precautionary measure to avoid the risk of impacts upon this protected species. The line of trees and buildings provide habitat for nesting birds and it is anticipated adverse impacts can be avoided through sensitive timing of works. Where this is not feasible, a nesting bird check will be required.

No direct evidence of roosting bats was recorded during the inspection and the buildings were deemed to be of negligible potential. Roosting bats are not a constraint to the development, although are likely to be present in the wider area. A sensitive lighting scheme should be developed for any proposed exterior lighting to ensure the Site remains suitable for foraging, commuting and roosting bats post-development.

There are a range of measures that could be developed to promote biodiversity at the Site. The creation of a species-rich native hedgerow will deliver a Habitat of Principal Importance and it is recommended black poplar, a rare tree species characteristic of the local area, is included to further enhance this habitat. Other simple measures, such as the provision of deadwood features, bee lawns, as well as bird and bat boxes, will contribute to ensuring a sustainable development that helps to achieve both local and national biodiversity targets.

## 7. REFERENCES

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## 8. APPENDICES

### 8.1. Appendix 1: Relevant wildlife legislation and planning policy

Please note that the following is not an exhaustive list, and is solely intended to cover the most relevant legislation pertaining to species commonly associated with development sites.

Subject	Legislation (England)	Relevant prohibited actions
<i>Amphibians</i>		
Great crested newt <i>Triturus cristatus</i>  Natterjack toad <i>Epidalea calamita</i>	Schedule 2 of Conservation of Habitats and Species Regulations (2017, as amended)  Schedule 5 of The Wildlife and Countryside Act 1981 (as amended)	<ul style="list-style-type: none"> <li>Deliberately capture or kill, or intentionally injure;</li> <li>Deliberately disturb or recklessly disturb them in a place used for shelter or protection;</li> <li>Damage or destroy a breeding site or resting place;</li> <li>Intentionally or recklessly damage, destroy or obstruct access to a place used for shelter or protection; and</li> <li>Possess an individual, or any part of it, unless acquired lawfully.</li> </ul>
<i>Reptiles</i>		
Common lizard <i>Zootoca vivipara</i>  Adder <i>Vipera berus</i>  Slow-worm <i>Anguis fragilis</i>  Grass snake <i>Natrix helvetica helvetica</i>	Part of Sub-section 9(1) of Schedule 5 of The Wildlife and Countryside Act 1981 (as amended)	<ul style="list-style-type: none"> <li>Intentionally kill or injure individuals of these species (Section 9(1)).</li> </ul>

Subject	Legislation (England)	Relevant prohibited actions
<p>Sand lizard <i>Lacerta agilis</i></p> <p>Smooth snake <i>Coronella austriaca</i></p>	<p>Full protection under Section 9 of Schedule 5 of The Wildlife and Countryside Act 1981 (as amended)</p>	<ul style="list-style-type: none"> <li>• Deliberately or intentionally kill, capture (take) or intentionally injure;</li> <li>• Deliberately disturb;</li> <li>• Deliberately take or destroy eggs;</li> <li>• Damage or destroy a breeding site or resting place or intentionally damage a place used for shelter; or</li> <li>• Intentionally obstruct access to a place used for shelter.</li> </ul>
<i>Birds</i>		
<p>All wild birds</p>	<p>Wildlife and Countryside Act 1981 (as amended)</p>	<ul style="list-style-type: none"> <li>• Intentionally kill, injure, or take any wild bird or their eggs or nests.</li> </ul>
<p>'Schedule 1' birds</p>	<p>Schedule 1 of the Wildlife and Countryside Act 1981 (as amended)</p>	<ul style="list-style-type: none"> <li>• Disturb any wild bird listed on Schedule 1 whilst it is building a nest or is in, on, or near a nest containing eggs or young; or</li> <li>• Disturb the dependent young of any wild bird listed on Schedule 1.</li> </ul>
<i>Mammals</i>		
<p>Bats (all UK species)</p>	<p>Schedule 2 of Conservation of Habitats and Species Regulations (2017, as amended)</p>	<ul style="list-style-type: none"> <li>• Deliberately capture, injure or kill a bat;</li> <li>• Deliberately disturb a bat (disturbance is defined as an action which is likely to: (i) Impair their ability to survive, to breed or reproduce, or to rear or nurture their young; (ii) Impair their ability to hibernate or migrate; or (iii) Affect significantly the local</li> </ul>

Subject	Legislation (England)	Relevant prohibited actions
	Schedule 5 of Wildlife and Countryside Act 1981 (as amended)	<p>distribution or abundance of the species);</p> <ul style="list-style-type: none"> <li>• Damage or destroy a bat roost;</li> <li>• Intentionally or recklessly disturb a bat at a roost; or</li> <li>• Intentionally or recklessly obstruct access to a roost.</li> </ul> <p>In this interpretation, a bat roost is "<i>any structure or place which any wild [bat]...uses for shelter or protection</i>". Legal opinion is that the roost is protected whether or not the bats are present at the time.</p>
Badger <i>Meles meles</i>	Protection of Badgers Act 1992	<p>Under Section 3 of the Act:</p> <ul style="list-style-type: none"> <li>• Damage a sett or any part of it;</li> <li>• Destroy a sett;</li> <li>• Obstruct access to, or any entrance of, a sett; or</li> <li>• Disturb a badger when it is occupying a sett.</li> </ul> <p>A sett is defined legally as any structure or place which displays signs indicating current use by a badger (Natural England 2007).</p>
Hazel dormouse <i>Corylus avellana</i>	Schedule 2 of Conservation of Habitats and Species Regulations (2017, as amended)	<ul style="list-style-type: none"> <li>• Intentionally or deliberately capture or kill, or intentionally injure;</li> </ul>



Subject	Legislation (England)	Relevant prohibited actions
	Schedule 5 of Wildlife and Countryside Act 1981 (as amended)	<ul style="list-style-type: none"> <li>• Deliberately disturb or intentionally or recklessly disturb them in a place used for shelter or protection;</li> <li>• Damage or destroy a breeding site or resting place;</li> <li>• Intentionally or recklessly damage, destroy or obstruct access to a place used for shelter or protection; and</li> <li>• Possess an individual, or any part of it, unless acquired lawfully.</li> </ul>
Otter <i>Lutra lutra</i>	<p>Schedule 2 of Conservation of Habitats and Species Regulations (2017, as amended)</p> <p>Section 9(4)(b) and (c) of Schedule 5 of Wildlife and Countryside Act 1981 (as amended)</p>	<ul style="list-style-type: none"> <li>• Deliberately capture, injure or kill an otter;</li> <li>• Deliberately disturb an otter in such a way as to be likely to significantly affect the local distribution or abundance of otters or the ability of any significant group of otters to survive, breed, rear or nurture their young;</li> <li>• Intentionally or recklessly disturb any otter whilst it is occupying a holt;</li> <li>• Damage or destroy or intentionally or recklessly obstruct access to an otter holt.</li> </ul>
Water vole <i>Arvicola amphibius</i>	Section 9 of Schedule 5 of Wildlife and Countryside Act 1981 (as amended)	<ul style="list-style-type: none"> <li>• Intentionally kill, injure or take water voles;</li> <li>• Possess or control live or dead water voles or derivatives;</li> <li>• Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection; or</li> <li>• Intentionally or recklessly disturb water voles whilst occupying a structure or place used for that purpose.</li> </ul>

Subject	Legislation (England)	Relevant prohibited actions
<i>Crustaceans</i>		
White-clawed crayfish <i>Austropotamobius pallipes</i>	Section 9(1) of Schedule 5 of Wildlife and Countryside Act 1981 (as amended)	<ul style="list-style-type: none"> <li>Intentionally kill, injure or take white-clawed crayfish by any method.</li> </ul>

#### The Conservation of Habitats and Species Regulations 2017 (as amended)

Full legislation text available at: [The Conservation of Habitats and Species Regulations 2017 \(as amended\)](#)

#### The Wildlife and Countryside Act 1981 (as amended)

Full legislation text available at: <http://www.legislation.gov.uk/ukpga/1981/69/contents>.

#### Countryside and Rights of Way Act 2000

Full legislation text available at: <http://www.legislation.gov.uk/ukpga/2000/37/contents>

#### Protection of Badgers Act 1992

Full legislation text available at: <http://www.legislation.gov.uk/ukpga/1992/51/contents>

#### Section 41 of Natural Environments and Rural Communities (NERC) Act 2006

Full legislation text available at: <http://www.legislation.gov.uk/ukpga/2006/16/section/41>

Many of the species above, along with a host of others not afforded additional protection, are listed on Section 41 of the NERC Act 2006.

Section 41 (S41) of the Natural Environment and Rural Communities (NERC Act 2006) requires the Secretary of State to publish a list of habitats and species that are of principal importance for the conservation of biodiversity in England. The list (including 56 habitats and 943 species) has been drawn up in consultation with Natural England and draws upon the UK Biodiversity Action Plan (BAP) List of Priority Species and Habitats.

The S41 list should be used to guide decision-makers such as local and regional authorities to have regard to the conservation of biodiversity in the exercise of their normal functions – as required under Section 40 of the NERC Act 2006. The duty applies to all local authorities and extends beyond just conserving what is already there, to carrying out, supporting and requiring actions that may also restore or enhance biodiversity.

### **Schedule 9 of Wildlife and Countryside Act 1981 (as amended)**

In addition to affording protection to some species, The Wildlife and Countryside Act 1981 (as amended) also names species which are considered invasive and require control. Section 14 of the Act prohibits the introduction into the wild of any animal of a kind which is not ordinarily resident in, and is not a regular visitor to, Great Britain in a wild state, or any species of animal or plant listed in Schedule 9 to the Act. In the main, Schedule 9 lists non-native species that are already established in the wild, but which continue to pose a conservation threat to native biodiversity and habitats, such that further releases should be regulated.

### **Wild Mammals (Protection) Act 1996**

Full legislation text is available at: <http://www.legislation.gov.uk/ukpga/1996/3/contents>

Under this legislation it is an offence to cause unnecessary suffering to wild mammals, including by crushing and asphyxiation. It largely deals with issues of animal welfare, and covers all non-domestic mammals including commonly encountered mammals on development sites such as rabbits, foxes and field voles.

### **Birds of Conservation Concern (BoCC)**

This is a quantitative assessment of the status of populations of bird species which regularly occur in the UK, undertaken by the UK's leading bird conservation organisations. It assesses a total of 246 species against a set of objective criteria to place each on one of three lists – Green, Amber and Red – indicating an increasing level of conservation concern. There are currently 52 species on the Red list, 126 on the Amber list and 68 on the Green list. The classifications described have no statutory implications, and are used merely as a tool for assessing scarcity and conservation value of a given species.

### **National Planning Policy Framework (NPPF)**

Full text is available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

The revised NPPF was updated on 20 July 2021 setting out the Government's planning policies for England and the process by which these should be applied. The policies within the NPPF are a material consideration in the planning process. The key principle of the NPPF is a presumption in favour of sustainable development, with sustainable development defined as a balance between economic, social and environmental needs.

Policies 174 to 188 of the NPPF address conserving and enhancing the natural environment, stating that the planning system should:

- Contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes;
- Recognise the wider benefits of ecosystem services; and
- Minimise impacts on biodiversity and provide net gains in biodiversity where possible, contributing to the Government’s commitment to halt the overall decline in biodiversity.

Furthermore there is a focus on re-use of existing brownfield sites or sites of low environmental value as a priority, and discouraging development in National Parks, Sites of Specific Scientific Interest, the Broads or Areas of Outstanding Natural Beauty other than in exceptional circumstances.

Where possible, planning policies should also

“promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity”.

## 8.2. Appendix 2: UK Habitat Classification species list

Please note that these lists are intended to be incidental records and do not constitute a full botanical survey of the site. Relative abundance is given using the DAFOR scale. Please see Table 2 for details.

### Modified grassland

Common Name	Systematic Name	Relative abundance
Annual meadow-grass	<i>Poa annua</i>	F
Common nettle	<i>Urtica dioica</i>	F
Creeping buttercup	<i>Ranunculus repens</i>	O
Forget-me-not	<i>Myosotis sp.</i>	O
Moss	<i>Drepanocladus vernicosus</i>	O
Perennial rye-grass	<i>Lolium perenne</i>	O
Willowherb	<i>Epilobium sp.</i>	O
Groundsel	<i>Senecio vulgaris</i>	R

### Line of trees (west)

Common Name	Systematic Name	Relative abundance
Leyland cypress	<i>Cupressocyparis leylandii</i>	D
Elder	<i>Sambucus nigra</i>	O
Bramble	<i>Rubus fruticosus agg.</i>	R
Ivy	<i>Hedera helix</i>	R

### Line of trees (north)

Common Name	Systematic Name	Relative abundance
Ash	<i>Fraxinus excelsior</i>	D
Elder	<i>Sambucus nigra</i>	O
Hawthorn	<i>Crataegus monogyna</i>	O
Bramble	<i>Rubus fruticosus agg.</i>	R
Hedge bindweed	<i>Calystegia sepium</i>	R

### 8.3. Appendix 3: Site photographs

**Photograph 1: Bare ground**



**Photograph 2: Modified grassland (south-west parcel)**



**Photograph 3: Modified grassland (eastern parcel)**



**Photograph 4: Building 1 north east aspect**



**Photograph 5: Building 1 interior**



**Photograph 6; Building 2 north-east aspect**





**Photograph 7: Building 2 interior**



**Photograph 8: Building 3 west aspect**



**Photograph 9: Building 3 gaps in timber and brickwork of interior wall**



**Photograph 10: Hardstanding**



**Photograph 11: Line of trees (western boundary)**



**Photograph 12: Line of trees (northern boundary)**



## 8.4. Appendix 4: Bird and bat box recommendations

### **Bird box recommendations**


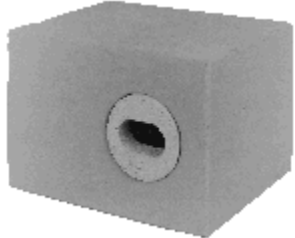
#### Swift boxes

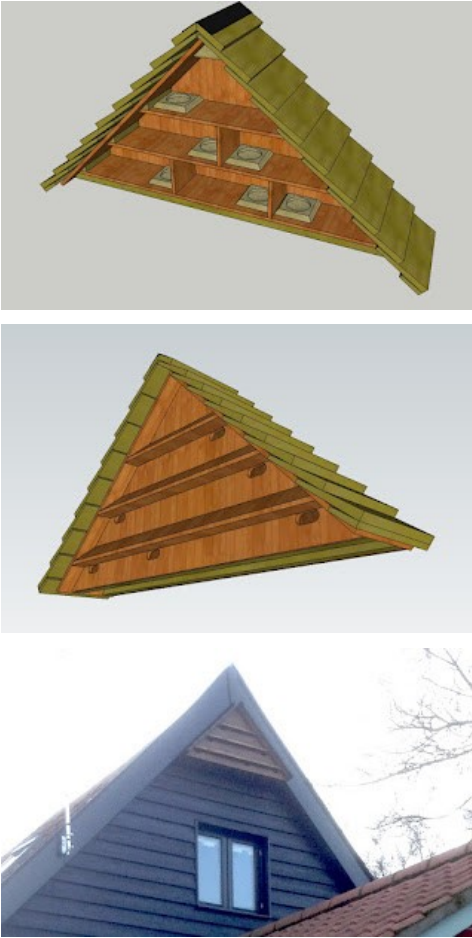

Swifts are colonial nesters and it is important to have several nest sites in one area. Therefore it is recommended the four boxes are installed on one building. Swifts feed almost exclusively on the aerial plankton of flying insects and airborne spiders of small to moderate size, so therefore require habitats which support these invertebrates.

Nest boxes designed for swifts should be installed at least 5m high, around the eaves of the building or under deeply overhanging eaves to allow swifts to drop into the air to forage. The boxes should be positioned away from climbing plants to avoid access for predators such as rodents.

Swifts typically nest in flat spaces within buildings or within a crevice or cavity. The ideal nest box should have an oval or rectangular hole around 30mm (h) x 65mm (w). The internal dimensions of the box should be approximately 400mm (w) x 200mm (d) x 150mm (h).

Swifts can be attracted to areas that they have not previously colonised using 'swift response calls'. Audio CDs are available for this purpose and are available on the Schwegler website ([www.schwegler-nature.com](http://www.schwegler-nature.com)).


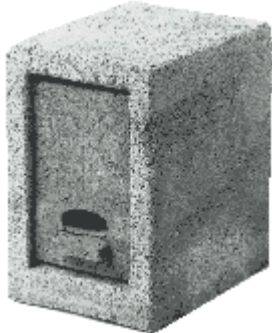
Swift		
Example	Description	Picture
S Brick	The S Brick is designed for swifts and spans a single course of bricks. It can also be used by house sparrows. It can be tailored for different brick sizes, cavity widths and brick facings. It can be included in brick walls or rendered over, or placed in eaves <a href="https://actionforswifts.blogspot.com/p/s-brick.html">https://actionforswifts.blogspot.com/p/s-brick.html</a>	
Schwegler Brick Box Type 25	<a href="http://www.schwegler-nature.com">www.schwegler-nature.com</a> This brick design can be built into the wall of the new development and the external surface, excluding the hole, can be rendered to match the surrounding wall.	

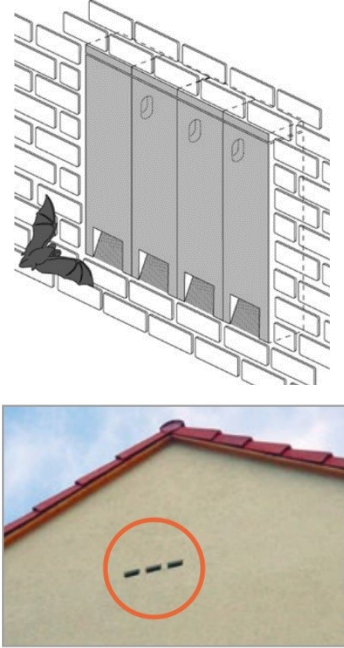
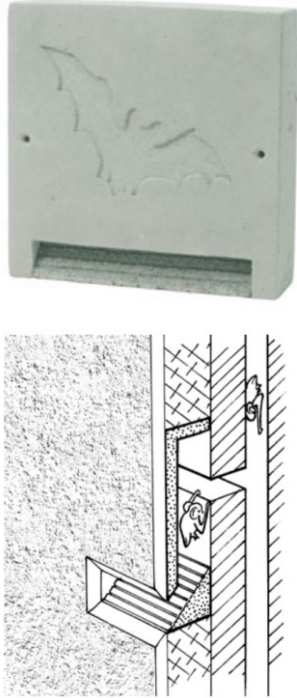
Swift		
Example	Description	Picture
<p>Action for Swifts triangular swift colony box</p>	<p>Designed to integrate seamlessly with the apex of gable ends, these bespoke cabinets can provide three, six or 10 nesting chambers. Suitable for swift, but will also be used opportunistically by other species such as house sparrow, great and blue tit..</p> <p>Information on the construction is available at : <a href="http://actionforswifts.blogspot.com/p/triangular-colony-boxes.html">http://actionforswifts.blogspot.com/p/triangular-colony-boxes.html</a></p>	 <p>(images from <a href="#">ActionForSwifts</a>)</p>
<p>Woodstone Build-in Swift Box</p>	<p><a href="https://gardenature.co.uk">https://gardenature.co.uk</a></p> <p>This nest box is made from a concrete and wood fibre mix. It can be mounted on a wall, or it can be built into the fascia of a wall. The front of the Woodstone swift box can be removed for cleaning.</p> <p>It should be fitted at least 5 metres above the ground ensuring there is an unobstructed flight path for birds entering and leaving the box.</p>	

## **Bat box recommendations**

A wide range of bat boxes are available to suit a variety of species and design requirements. Bat boxes can be mounted externally on buildings, built directly into the wall structure or mounted on trees (dependent on box design).

Boxes are more likely to be inhabited if they are located where bats feed and it may help to place the box close to features such as tree lines or hedgerows, which bats are known to use for navigation and can provide immediate cover for bats leaving the roost. Boxes should be placed in areas sheltered from strong winds and are exposed to the sun for part of the day. Access to any bat roosting features should not be lit and should also be at a reasonable height to avoid predation (at least 2m if possible, preferably 4-5m).

Example	Description	Picture
Schwegler 1FQ	<p><a href="http://www.schwegler-nature.com">www.schwegler-nature.com</a></p> <p>Dimensions: 60(h) x 35(w) x 9(d) cm Weight: 15.8kg Installation: Attached to most external brick, timber or concrete walls at least 3m high. Can also be placed inside roof space</p> <p>This box is ideal for all types of bats that inhabit buildings. The box is weather-resistant and is also temperature controlled and self-cleaning. The front panel of the box can also be painted during manufacture, to match an existing colour.</p>	
Brick Box Type 27	<p><a href="http://www.schwegler-nature.com">www.schwegler-nature.com</a></p> <p>Dimensions: 26.5(h) x 18(w) x 24(d) cm Weight: 9.5kg Installation: Can be flush with outside wall and rendered or covered so only the entrance hole is visible.</p> <p>This box is ideal for all types of bats that inhabit buildings.</p>	

Example	Description	Picture
<p>Schwegler 2FR</p>	<p><a href="http://www.schwegler-nature.com">www.schwegler-nature.com</a></p> <p>Dimensions: 47(h) x 20(w) x 12.5(d)</p> <p>Weight: 9.8kg</p> <p>Installation: Can be installed on external walls – either flush or beneath a rendered surface in concrete and, during renovation work, under wooden panelling or in building cavities. Several tubes should be installed together (recommended three).</p> <p>This box is ideal for all types of bats that inhabit buildings. By installing boxes side by side a colony roost can be created with any size requirement. This box has three different environmental partitions inside, attracting different species. The box is self-cleaning.</p>	 <p>The top image is a technical diagram showing three Schwegler 2FR bat boxes mounted on a brick wall. A bat is shown flying towards the entrance of the middle box. The bottom image is a photograph of a building's exterior wall with a red roofline. A red circle highlights a small, dark, horizontal slot in the wall, which is the entrance to one of the bat boxes.</p>
<p>Schwegler 1FE</p>	<p><a href="http://www.schwegler-nature.com">www.schwegler-nature.com</a></p> <p>Dimensions: 30(h) x 30(w) x 8(d) cm.</p> <p>Weight: approx. 5.1 kg.</p> <p>Installation: Installation of multiple units is recommended. The box can be integrated into insulation or masonry. It can also be attached to the underlying structure to cover existing cavities, allowing bats to still use them. Install at least 3m above the ground.</p> <p>This is a general purpose box, suitable for all species. There is a maintenance-free access panel for installing on or in the surface of exterior walls. The open rear enables bats to continue to use existing nesting sites in walls.</p>	 <p>The top image is a photograph of a white, rectangular Schwegler 1FE bat box with a bat silhouette embossed on its front face. The bottom image is a technical cross-section diagram showing the box being installed into a wall. The diagram illustrates how the box fits into a cavity, with a bat shown entering through the front and exiting through the rear of the box.</p>



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